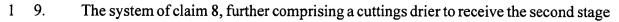
## We claim:

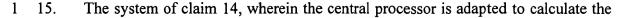
1	1.	A drill	ling mud reclamation system comprising:
2		(a)	a mud inlet line adapted to be connected to a source of solids-laden drilling
3			mud;
4		(b)	a first stage centrifuge provided with the mud from the source for separating
5			the heavy weight solid components from the mud and forming a first stage
6			liquid discharge;
7		(c)	a second stage centrifuge provided with the first stage liquid discharge for
8			removing lighter weight solid components in the first stage liquid discharge
9			and for forming a second stage liquid discharge and a second stage solids
10			discharge defining a weight;
11		(d)	a mass flow sensor for measuring weight of the second stage solids discharge;
12			and
13		(e)	a flow rate sensor for measuring the flow rate of first stage liquid discharge
14			through the second stage centrifuge.

- 1 2. The system of claim 1 including first and second stage pumps connected to the 2 respective inputs of said first and second stage centrifuges.
- 1 3. The system of claim 1 wherein the first stage liquid discharge is input into a surge
- 2 tank and the surge tank connects through a motor-driven outlet valve to the second stage
- 3 centrifuge.

- 1 4. The system of claim 3, further comprising a sensor for measuring liquid level in the 2 surge tank.
- 1 5. The system of claim 1, wherein the mass flow sensor communicates with the second
- 2 stage liquid discharge from the second stage centrifuge, and wherein the mass flow sensor
- 3 comprises:
- 4 a. a liquid receiving tank;
- b. a liquid level indicator for indicating liquid level in the liquid receiving tank;
- 6 and
- 7 c. a weight sensor to measure the weight of the liquid in the tank.
- 1 6. The system of claim 5, wherein the mass flow sensor is adapted for a determination
- 2 of the difference in solids into and out of the second stage centrifuge.
- 1 7. The system of claim 5, wherein the liquid receiving tank is mounted for axial rotation
- 2 on an axis.
- 1 8. The system of claim 1, wherein the second stage centrifuge forms a second stage
- 2 solids discharge and the mass flow sensor communicates with the second stage solids
- 3 discharge.



- 2 solids discharge and to remove liquid from the second stage solids discharge.
- 1 10. The system of claim 9, further comprising:
- a. first and second stage pumps connected to the respective inputs of said first
  and second stage centrifuges; and
- b. a central processor for monitoring and controlling the first and second stage centrifuges, the first and second stage pumps, and the cuttings drier.
- 1 11. The system of claim 1, further comprising a central processor for monitoring and
- 2 controlling the operation of the first and second stage centrifuges.
- 1 12. The system of claim 2, further comprising a central processor for monitoring and
- 2 controlling the operation of the first and second stage pumps.
- 1 13. The system of claim 12, wherein the central processor controls the operation of the
- 2 second stage pump at the point in its operational characteristic for the maximum removal of
- 3 lighter weight solid components from the drilling mud.
- 1 14. The system of claim 13, further comprising a first mud flow sensor on the first stage
- 2 pump and a second mud flow sensor on the second stage pump.



- 2 quantity of low gravity solids removed by the reclamation system based on the mud flow
- 3 sensed by the second mud flow sensor and the weight of solids removed by the second stage
- 4 centrifuge as sensed by the mass flow sensor.
- 1 16. The system of claim 15, wherein the central processor is further adapted to calculate
- 2 economic savings from the quantity of drilling mud which need not be added to the system
- 3 for dilution purposes.
- 1 17. The system of claim 15, wherein the central processor is further adapted to modify
- 2 the operation of the second stage centrifuge based on the mud flow sensed by the second
- 3 mud flow sensor and the weight of solids removed by the second stage centrifuge as sensed
- 4 by the mass flow sensor.
- 1 18. The system of claim 12, further comprising:
- 2 a. means for determining the quantity of high gravity solids removed by the first
- 3 stage centrifuge; and
- b. wherein the central processor is adapted to vary the bowl speed of the first
- stage centrifuge to maximize the high gravity solids content of the first
- 6 centrifuge solids discharge.
- 1 19. A method of determining the effectiveness of a centrifuge in removing solids from
- 2 a solids laden liquid, comprising the steps of:

- 3 measuring the weight and flow rate of a predetermined volume of a sample a. of the solids-laden liquid; 4 processing the solids laden liquid through the centrifuge to remove solids 5 b. 6 from the solids laden liquid to produce a centrate and a solids discharge; measuring the weight and flow rate of the predetermined volume of the 7 c. 8 centrate; 9 d. . comparing the weights and flow rates of the samples of solids-laden liquid and the centrate; 10 11 calculating the quantity of solids removed by the centrifuge. e.
- 1 20. The method of claim 19, wherein the solids laden liquid is drilling mud, and further
- 2 comprising the step of calculating the dilution costs of drilling mud saved by the system.
- 1 21. The method of claim 20, further comprising the steps of
- 2 a. determining the per unit cost of centrate; and
- b. calculating the economic value of the centrate saved by the method.
- 1 22. The method of claim 19, further comprising the step of measuring the total discharge
- 2 of contaminants from the system.
- 1 23. The method of claim 22, further comprising the step of generating a report of the total
- 2 discharge of contaminants from the system.

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- 24. 1 The method of claim 19, further comprising the steps of:
- 2 processing the solids discharge in a cuttings drier to produce a drier fluids a. 3 discharge and a drier solids discharge; and
- 4 b. determining the flow rate of the drier fluids discharge.
- 25. 1 The method of claim 24, further comprising the step of determining the economic
- 2 savings represented by the drier fluids discharge.
- 2 connected to a source of solids-laden drilling mud; a first stage pump provided with the mud from the source; a first stage centrifuge to receive mud from the first stage pump and for 3 4 separating the heavy weight solid components from the mud and forming a first stage liquid 5 discharge; a second stage pump to receive the first stage liquid discharge; a second stage centrifuge to receive the first stage liquid discharge from the second stage pump and for 7 removing lighter weight solid components in the first stage liquid discharge and for forming a second stage liquid discharge and a second stage solids discharge defining a weight; and 8

In a drilling mud reclamation system comprising a mud inlet line adapted to be

and a drier solids discharge; a monitoring and control system for the reclamation system 10

a cuttings drier to receive the second stage solids discharge to produce drier liquid discharge

- 11 comprising:
- 12 a mass flow sensor for measuring weight of the second stage solids discharge; a.
- 13 and
- a flow rate sensor for measuring the flow rate of first stage liquid discharge 14 b. through the second stage centrifuge; 15

